

## ***2. WHERE ARE WE NOW?***

### ***Problems, Needs, and Opportunities***

*Section 2 provides the reader with background information about the Central Coast Region and its transportation system. It also describes some of the important transportation challenges and needs that State, Regional, and Local agencies have identified in the region. Finally, a brief review of ITS activities that are currently implemented or planned for implementation within the Central Coast Region is provided. These activities provide a stepping stone for further enhancement of ITS in the region to address important transportation challenges and needs.*

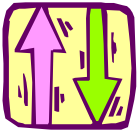
### ***2.1 OVERVIEW OF THE TRANSPORTATION CONTEXT***

This section provides an overview of the Central Coast's general demographic characteristics and of the region's existing transportation system. These characteristics are important because they define the environment into which ITS must be deployed and operated. While this section provides only an overview, additional detail is presented in Working Paper #1 contained in Volume III of the Strategic Plan.

#### ***2.1.1 General Characteristics***

Although the Central Coast is largely rural in nature, it does include a number of significant and growing urban areas. According to information provided in each of the rural or metropolitan transportation plans for the region and by the State Department of Finance, the Central Coast Region was home to 1,268,000 residents in 1995 (see Exhibit 2.1). By the year 2020, that population is expected to exceed 1,746,000 residents. This represents an approx. thirty-eight percent (38%) increase in population over this twenty-five (25) year period.

As the population increases, demands on the region's transportation system will also increase. Commuting in several communities will become increasingly difficult resulting in increased travel time and delay, and increased noise and air quality impacts. Experience has shown that



the rate of growth associated with vehicle miles traveled (VMT) and average daily trips exceeds the expected rate of population growth. With population increasing by approx. 38% between 1995 and the year 2020, it can be expected that the growth in VMT and number of daily trips will be greater than 38%. At the same time, it is expected that the growth in the number of new lane miles of major highways will not keep pace with population growth. Therefore, it will become increasingly important to maximize the effectiveness and efficiency of the Central Coast's existing transportation system. Achieving this goal is the primary objective of ITS.

***Exhibit 2.1 - Central Coast Population Estimates– 1995\* and 2020***

County	Population		
	1995	2020	% Growth
Santa Cruz	241,900	303,600	25.5
San Benito	42,500	80,700	90.0
Monterey	362,900	536,600	47.9
San Luis Obispo	227,200	322,600	42.0
Santa Barbara	393,500	502,500	27.7
TOTAL:	1,268,000	1,746,000	37.7

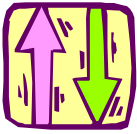
Sources: Regional Transportation Plans, State Department of Finance, and 1997 Regional Population and Employment Forecast (AMBAG)

\* Population estimates were available from all counties for this year only.

A number of characteristics that further define the Central Coast environment are described below:

**Tourism.** A very important component of the region's strong economic base is tourism. Each of the counties accommodates a significant number of tourists year round. Tourists are attracted to numerous special events and attractions throughout the region, as well to the region's beaches and parks. As a result of this influx of additional traffic, and the specialized needs of travelers who may not be fully aware of the transportation system along the Central Coast, improved traveler information and safer, more efficient highways are vital. ITS can help address the needs of the region's tourists through enhanced traveler information systems, incident detection, adverse weather detection, and other applications.

**Activity Centers and Special Events.** The Central Coast Region is home to a large number of major activity centers and special events. Activity centers, which include airports, major universities, recreation areas, and other major attractions, contribute to congestion and related problems during certain time periods. While some activity centers are primarily tourist-oriented and may attract significant volumes of trips only during the summer months or on weekends,



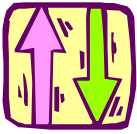
many operate year-round and attract both resident and visitor trips. Major special events within the region include races and concerts at the Laguna Seca Raceway, the AT&T Pebble Beach Golf Tournament, the Mid State Fair, the Fiesta and Summer Solstice celebrations in Santa Barbara, the annual Artichoke Festival in Castroville, and the Mardi Gras in San Luis Obispo. These types of special events can cause significant congestion, often in a focused geographic area and for short time periods before and after the event. Generally, these activity and event centers are not equipped to provide traveler information services to visitors, or to keep regional agencies up to date on special events to aid in the provision of traffic management efforts. ITS elements that can help address the needs of these activity centers and their visitors include traveler information systems, incident detection, adverse weather detection, and other applications.

**Agricultural Base and Goods Movement.** Efficient goods movement in and through the Central Coast Region is of major concern. A major industry in each of the Counties is agriculture. In Monterey County alone, agricultural production exceeds \$2.2 billion per year. In addition to agricultural products, the efficient transport of retail goods within and through the Central Coast is vital. Of course, the movement of these goods via trucks raises safety concerns and can lead to flow restrictions or congestion caused by these slower-moving vehicles. ITS strategies designed to enhance the movement of goods include vehicle tracking systems, roadside monitoring, and communication systems. Other strategies, such as travel information, hazard warning and incident detection systems, can not only improve truck operations, but may also provide safety and congestion relief benefits.

**Potential Seismic and Other Disasters.** The Central Coast Region is not immune from the devastating effects of earthquakes and other disasters. Besides earthquakes, landslides, flooding, wildfires, beach erosion, and rockslides have all resulted in significant delays along the State and Local transportation network within the Central Coast Region. The transportation system is key to implementation of San Luis Obispo County's emergency response plans, especially as it relates to presence of the Diablo Canyon Nuclear Power Plant. ITS can help reduce severe congestion during or following such disasters by providing timely and adequate traveler information, enhanced emergency dispatch systems, and incident detection and roadside assistance.

### ***2.1.2 Existing Transportation Systems***

The region's existing transportation system is a combination of State highways, other major street and road facilities, transit services, passenger rail service, passenger airline service at local

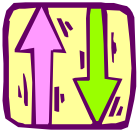


airports, and other systems including bike lanes and trails. An overview of some of these components is provided below. Each of these is described in more detail within Working Paper #1 contained in Volume III.

**Major Streets and Highways.** The Central Coast contains twenty-eight (28) State Routes (SR) or highways that connect the various communities within the Central Coast with each other and with other regions to the north, south and east. The region's State highway network is illustrated in Exhibit 2.2. Two major north-south facilities (US 101 and SR 1) traverse through the entire study area, serving the region's population base by providing major access to employment and market/retail centers throughout and beyond the Central Coast. These routes also serve as the primary shipment route for agricultural products grown in the region and may be alternate routes for north/south travel diverted from I-5. Principal highways providing connections to the east include SR 46, SR 156, and SR 166. In rural areas, safety and roadway condition information are of primary importance and may be addressed by a number of ITS applications. In many urban areas, these state facilities form an integral part of the arterial street network along with locally operated roadways. In the larger urban centers, these arterials are sometimes subject to peak period congestion and may be candidates for advanced traffic management and signal control systems.

**Public Transit Service.** Various forms of public transit service are provided within and between most communities and activity centers in the Central Coast Region. In the larger urban areas, transit typically operates on set routes and schedules (fixed-route service). In other areas, demand-responsive or dial-a-ride services are more prevalent. These transit systems provide necessary mobility for both residents and visitors. ITS applications may be used to improve the efficiency of these services (e.g. vehicle tracking systems, computer-aided dispatching and scheduling systems), and to improve the attractiveness to potential users (e.g. traveler information systems).

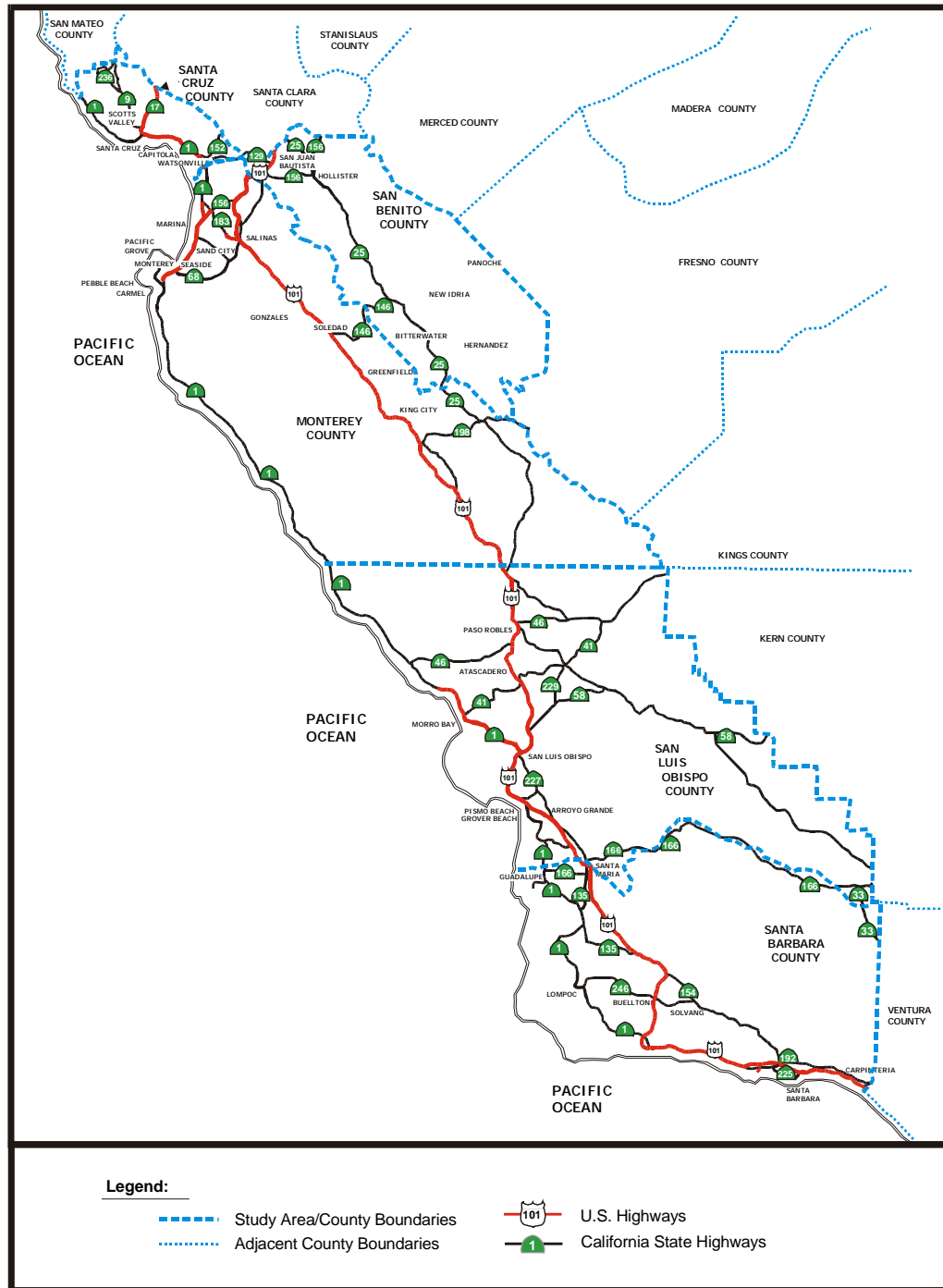
**Passenger Rail Service.** Passenger rail service is available to Central Coast visitors and residents through AMTRAK's Coast Starlight line that runs along the coast of California from Los Angeles to Seattle, Washington. The line has stops at stations located in Salinas, Paso Robles, San Luis Obispo and Santa Barbara. AMTRAK's San Diegan line service serves San Luis Obispo, Grover Beach, Guadalupe, Lompoc, Goleta, Santa Barbara, and Carpinteria, connecting these communities to the South Coast and the San Diego region. AMTRAK also provides bus connections to other communities and services. In the north, AMTRAK bus connections link both San Benito and Santa Cruz Counties to CalTrain services in Santa Clara County for those commuting to San Jose or the San Francisco Bay Area.

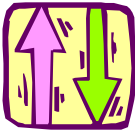


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*Exhibit 2.2 - Central Coast State Highway Network*





ITS applications focussing on traveler information may be appropriate to support and enhance the region's commuter and tourist passenger rail transportation systems. These applications may include electronic kiosks, electronic message signs, the Internet, and other information systems that provide timely (real-time or near real-time) information on train arrival and departure time and delays, and that link passengers to other modes.

**Passenger Air Service.** Limited passenger air service is available at airports located in Monterey (Monterey Peninsula Airport), San Luis Obispo, Santa Maria, and Santa Barbara. Nearby regional air service in the northern Central Coast is also available in San Jose and at the San Francisco International Airport. Nearby regional air service for Santa Barbara County is available at Los Angeles International Airport. As air service grows in the future, the regions major airports may need to consider the application of enhanced traveler information systems such as the use of electronic kiosks, electronic message signs, the Internet, and other information systems. This will ensure that commuters and tourists have maximum accessibility to air service and links to other modes of transportation.

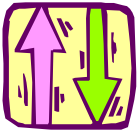
## ***2.2 IDENTIFICATION OF EXISTING AND FUTURE CHALLENGES***

A critical step in the development of the ITS Strategic Plan was the identification of the Central Coast's transportation-related problems, needs, and challenges. The importance of this step lies in the principle that addressing these challenges should be the driving force in implementing ITS strategies and projects. The objective is not to simply implement ITS projects because the technology is available.

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The Central Coast's existing and future transportation challenges were identified through an extensive and on-going outreach program. This included interviews and meetings with representatives of the various affected agencies, as well as through a review of pertinent documents including Regional Transportation Plans (RTPs), transit plans, other transportation studies, and documents and data provided through Internet resources.

The input received through this outreach effort was compiled into a set of fifteen key challenges or problem types as listed in Exhibit 2.3. While the exact wording for these challenges varied between sources, for the most part, the underlying issues were consistent among the five counties.



**Exhibit 2.3 - Central Coast Transportation-Related Challenges**

Key Challenges And Problems	
• Safety	• Real-Time System Monitoring
• Traveler Information Needs	• Efficient Goods Movement
• Recurring Congestion	• Impacts of Commercial Vehicles
• Non-Recurring Congestion and Incidents	• Better Planning Data
• Special Event/Activity Center Traffic	• Maintenance Activities
• Transit Efficiency and Effectiveness	• Inter-Agency Communication
• Transit Mobility and Accessibility	• Environmental Impacts
• Emergency Response	

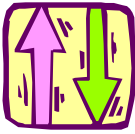
An overview of these challenges is presented in this section. In some instances, areas of special interest within a particular county are noted. Exhibits 2.4 and 2.5 illustrate the general location of the regional challenges and needs. More specific information regarding challenges and needs within the Central Coast Region is provided in Appendix B – Problems and Needs Definitions, as well in Working Paper #1 (see Volume III).

It should be noted that the challenges found in the Central Coast are not necessarily presented in order of priority. The level of priority for these challenges often varies by county and by subarea within each individual county. It should also be recognized that many of these challenges are inter-related and overlap. For example, safety issues are directly related to collisions and, in turn, non-recurring congestion.

The information presented below is not intended as a treatment of all transportation challenges in the Central Coast Region, but rather focuses on those that are most pertinent to ITS at this time. Possible ITS applications that might help meet the challenges are also briefly mentioned.

**Safety.** Improving the safety of all travelers is a challenge throughout the region. There are a number of transportation safety problems that have proven difficult and costly to address with basic engineering tools such as highway widening, exclusive turn lanes, widened shoulders and passing lanes, truck climbing lanes, etc. Highway safety along a number of facilities in the region is a significant concern of State, Regional, and Local agencies.

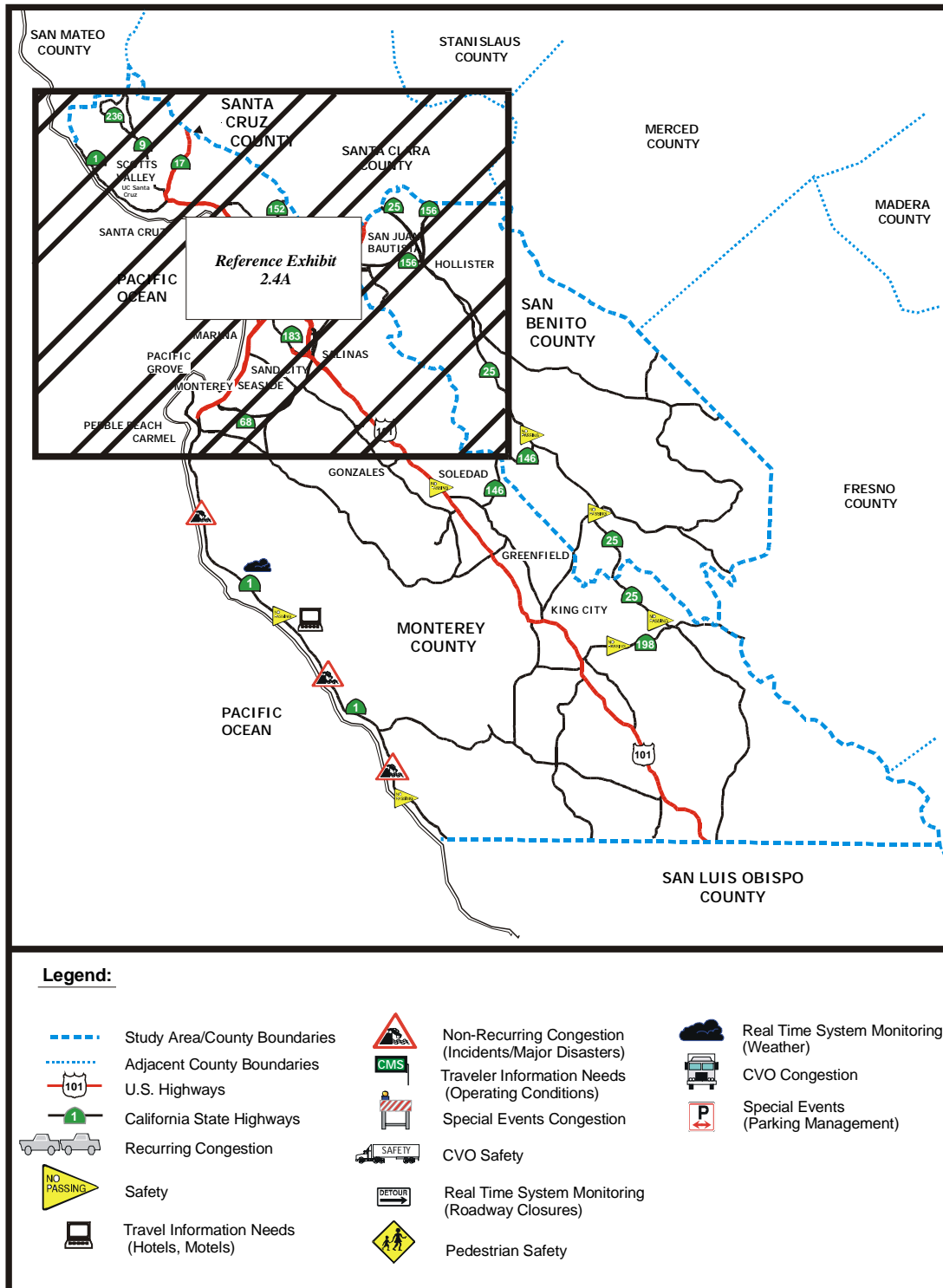




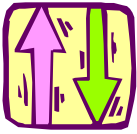
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*Exhibit 2.4 – Central Coast Regional Challenges and Needs – Northern Counties*



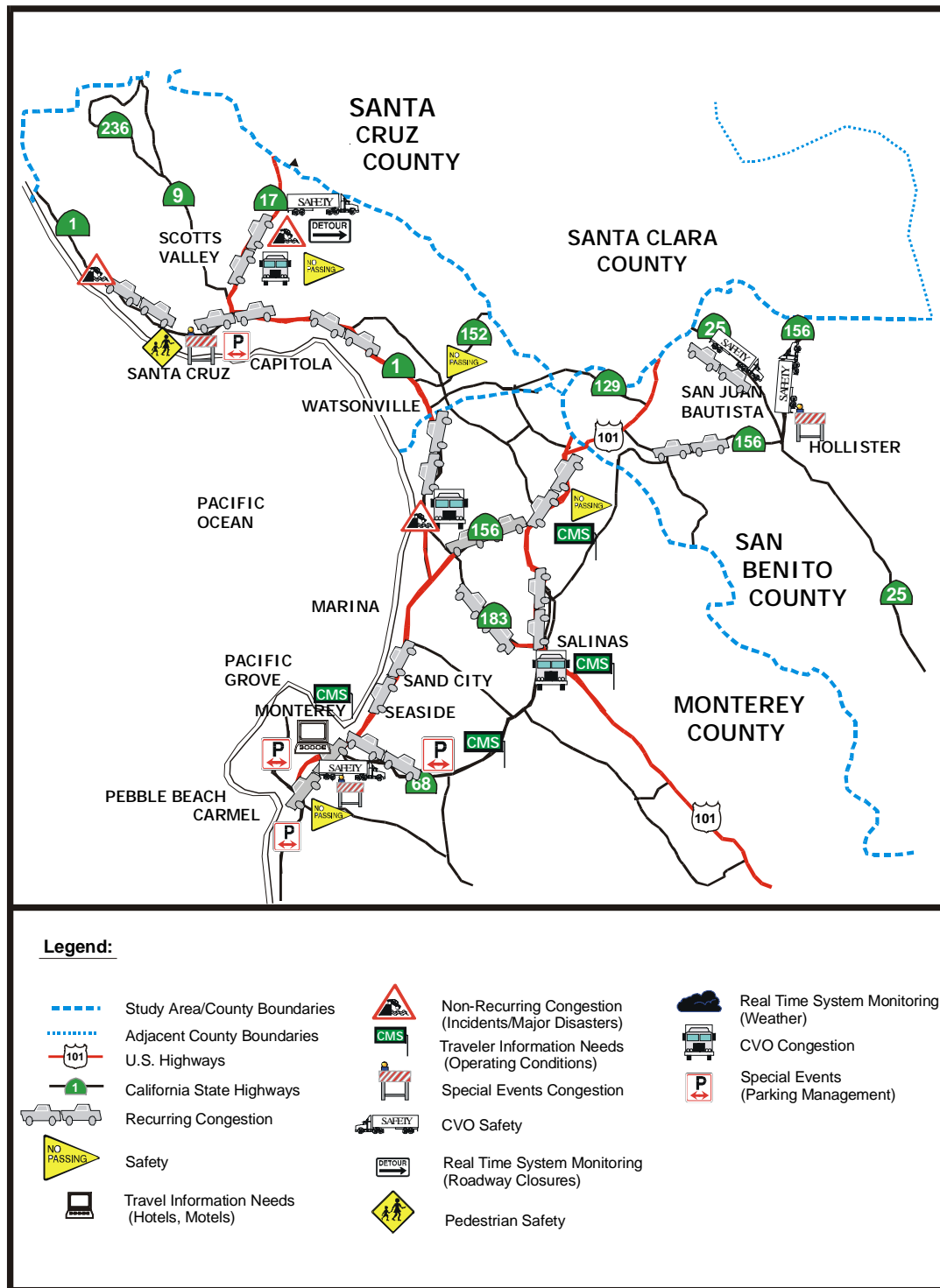


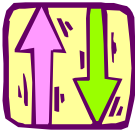


## Central Coast ITS Strategic Deployment Plan

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Exhibit 2.4A – Central Coast Regional Challenges and Needs – Northern Counties

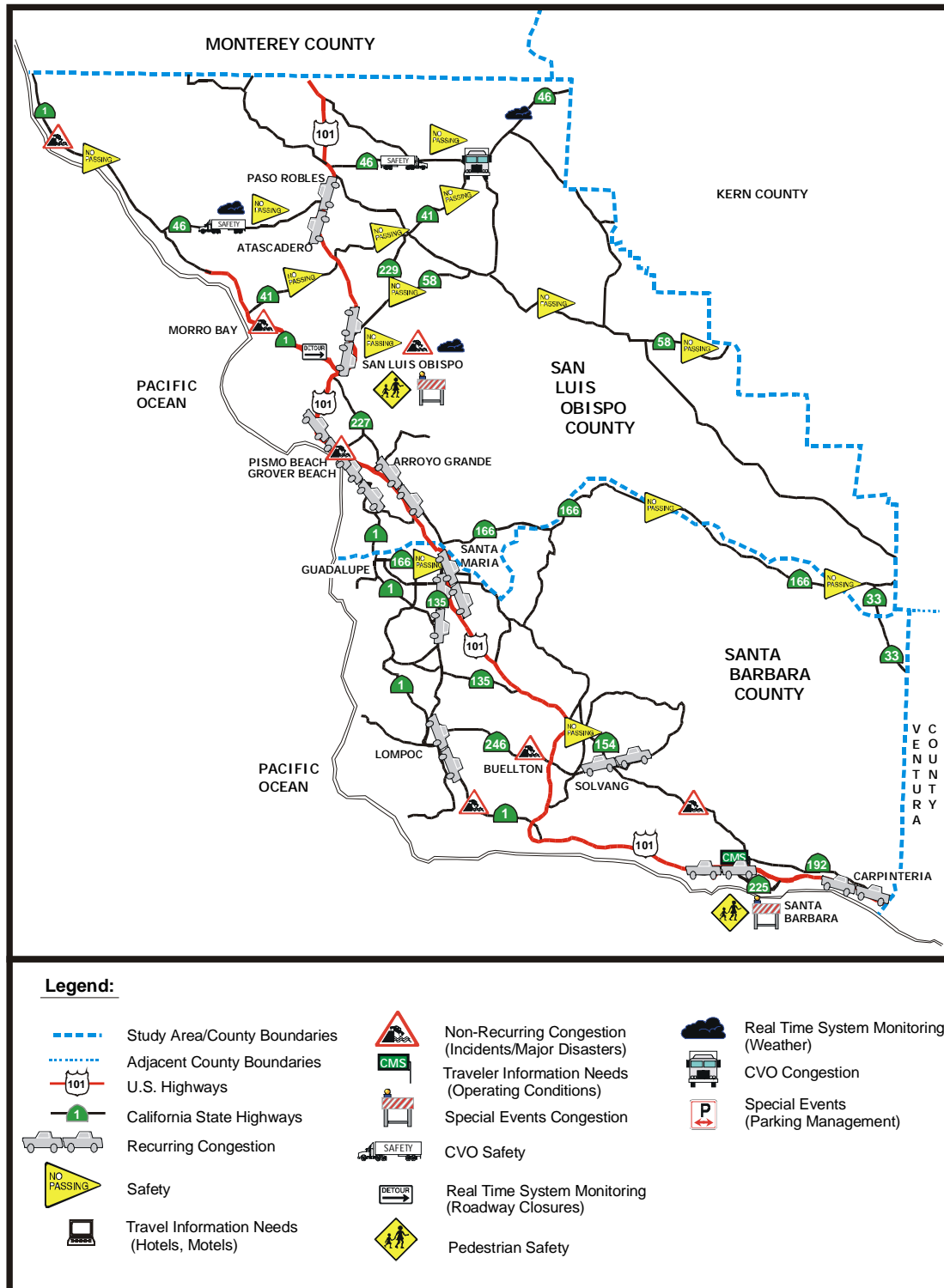


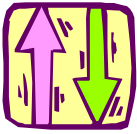


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*Exhibit 2.5 – Central Coast Regional Challenges and Needs – Southern Counties*

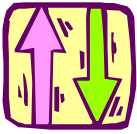




Many safety concerns in the region are related to the design constraints of specific roadways. Critical facilities include coastal routes such as SR 1, and those that traverse mountainous areas such as SR 17 and SR 154, although safety concerns apply to all the region's highways and roadways. Another safety issue that is of general concern is pedestrian accidents. Pedestrian safety has been identified as a major concern at universities and special events/activity centers throughout the Central Coast Region. Fatigue-related and vehicular collisions at railroad crossings are also issues throughout the region. ITS strategies that may address safety concerns include safety and hazard warning systems, improved traveler information, advanced railroad crossing systems, incident management, and emergency response systems.

**Traveler Information Needs.** Maximizing the efficient use of the transportation system requires that travelers be informed about travel options and current operating conditions. This is especially important in the Central Coast Region because it attracts a significant number of visitors who may not be fully aware of the transportation system along the Central Coast. Inefficient use can not only lead to transportation-related impacts such as congestion, unsafe conditions, and additional vehicle miles traveled, but may also have economic impacts resulting from inefficient goods movement and unfavorable experiences of visitors. The type of information that may be useful to traveler includes roadway conditions, incidents, construction activities, alternative routes, transit schedules, and weather conditions. Traveler information may be disseminated through a variety of means including changeable message signs (CMS) and highway advisory radio (HAR) along roadways, Internet services, and kiosks at activity centers and major transportation hubs. While the provision of traveler service and operating condition information is desirable for all locations throughout the Central Coast, areas of focus may include congested corridors such as SR 17 in Santa Cruz and US 101 in Santa Barbara, key highway junctions such as US 101/SR 156 in Monterey and US 101/SR 1 in San Luis Obispo, and for major attractions such as the Monterey Peninsula, Big Sur, and beach areas.

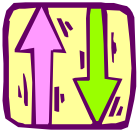
**Recurring Congestion.** This challenge refers to the need for managing and minimizing the impacts of recurring commuter, recreational, and activity center-related congestion. This congestion is defined as the regular occurrence of heavy or significant vehicular travel along specific streets and highways. While congestion of some degree occurs on major streets and highways throughout the Central Coast, congestion along US 101 and SR 1 within the urbanized sections of Santa Barbara, Santa Maria, Monterey, and San Luis Obispo was of greatest concern; as was congestion along SR 17 between Santa Cruz and Santa Clara County. ITS applications that address this challenge include traffic signal and freeway control systems, weather detection, and traveler information.



**Non-Recurring Congestion and Incidents.** This challenge refers to managing congestion that does not occur on a regular basis and is often the result of unplanned incidents. Sources of non-recurring congestion can include collisions, major disasters such as landslides that close roadways, construction activities, and special events. Transportation agencies need to quickly and accurately identify the cause of the non-recurring congestion, and to implement responses that minimizes the effects on the traveling public. The unpredictability of this congestion suggests variation in location, and potentially different ITS applications from those used for recurring congestion. Potential ITS applications include detection and surveillance systems, advanced communication systems, traveler alert or information systems, and advanced incident management techniques. Improved cellular phone coverage would also enhance the usefulness of "mayday" systems and allow faster reporting of highway emergencies and incidents. This is a region-wide issue, affecting all facilities and agencies. This challenge is particularly important for SR 1, SR 17, US 101, SR 154, and other routes with high accident potential or prone to closures or severe weather conditions. In addition, incidents outside the Central Coast such as the closure of I-5, can shift commercial and recreational traffic onto the region's highways causing congestion.

**Special Event/Activity Center Traffic.** This challenge involves responding to the unique and irregular travel patterns and traffic conditions created by special events and activity centers. While not always recurring, this problem differs from non-recurring congestion in that the impacts are foreseeable and advance planning can occur. Issues related to special events and activity centers include access guidance, congestion, and parking. Strategies to aid in these efforts include traveler information services, portable traffic management systems (PTMS), adaptive signal control systems, and parking management strategies. Parking strategies include automated parking inventory used to identify parking lot usage, electronic fare payment, etc. Each of the counties in the region has activity centers and special events that draw large amounts of traffic. Some prominent examples include races at Laguna Seca raceway, the AT&T National Pro-Am Golf Tournament, and the Mid State Fair.

**Transit Efficiency and Effectiveness.** Transit efficiency and effectiveness is defined as the need to improve service quality and reliability, reduce vehicular travel demand, and improve transit service management. For the most part, the same transit issues were identified in all counties within the Central Coast Region, and involved resource levels, service coordination, and the effect of land development patterns. Potential ITS applications include vehicle tracking systems, electronic fare payment systems (e.g. "smart" cards), transit information systems, advanced vehicle maintenance systems, and automated passenger counting (APC) systems. Increased use of the Internet is envisioned to reduce printed materials costs and optimize staff

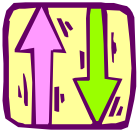


resources. While most discussions on transit centered on the region's bus and dial-a-ride systems, the need for improving passenger rail service and information was also identified. While this is a region-wide issue, affecting all transit agencies, implementation of most of these ITS applications would likely occur first with large providers such as Santa Cruz Metropolitan Transit District (SCMTD), Monterey-Salinas Transit (MST), San Luis Obispo Transit (SLOT), Central Coast Area Transit (CCAT), and Santa Barbara Metropolitan Transit District (SBMTD). However, there are some applications that may be appropriate for smaller dial-a-ride providers.

**Transit Mobility and Accessibility.** This challenge is defined as the need to provide improved or additional transit access and increased transit mobility through the provision of adequate transit services. This effort is hampered by service shortfalls throughout the region, especially outside of the more urbanized areas. While ITS does not directly address issues of increased service coverage and increased frequency, ITS applications such as computer-aided dispatching, and automated/electronic fare payment can improve service efficiency, thus freeing resources for service expansion. This challenge affects all transit service providers within the Central Coast Region.

**Emergency Response.** This need refers to the ability to quickly identify and react to emergencies or incidents. This is a challenge faced by all emergency service providers and services in the region. Incident management allows transportation agencies to quickly and accurately identify a variety of incidents through detection and surveillance of conditions, and to implement responses that minimize the effects of those incidents on the motoring public. ITS components that can help improve response time include advanced communications systems, expanded cell coverage, targeted expansion of the call box system, and promotion of "mayday" systems that allow emergency dispatchers to respond to emergencies by sending accident locations electronically to emergency and roadside response centers. The devices will improve emergency response and traffic management, speeding emergency response and reducing the risk of additional collisions.

**Real-Time System Monitoring.** This need covers the ability of transportation agencies to obtain accurate and timely information regarding the status and operation of transportation system components. Three categories of real-time system monitoring need to be addressed in the Central Coast Region including infrastructure needs or roadway closures, operating conditions, and weather. A variety of surveillance and detection technologies are available to help address this need. Possible applications may be targeted in high-volume, high incident corridors such as SR 1, SR 17, and US 101.



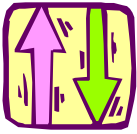
**Efficient Goods Movement.** This need recognizes the importance of goods movement to the region's economy, particularly as it relates to the agricultural industry. Thus, it is important that the transportation network be accessible and efficient for commercial operators. The problems of commercial operators include the inefficiency of the truck and load permitting processes, delay associated with weigh stations, delays due to congestion and inefficient routing, and traveler information needs. Maintaining efficient goods movement is a challenge throughout the Central Coast. While many of the issues are dealt with at the State level (e.g. permitting, clearance, etc.), those such as ensuring safe and efficient traffic flow along arterial streets must be dealt with at the Local level.

**Impacts of Commercial Vehicles on Highways.** A corollary to the above, the impact that commercial vehicles have on the region's roadway network were also a major concern. Because they are slower moving and less maneuverable, and simply because of their size, commercial vehicles can contribute to congestion and safety problems. These problems are of specific importance along highways such as SR 1, SR 17, and SR 46 that carry large volumes of truck traffic and traverse coastal or mountainous areas. In urban areas, particularly near major loading facilities, commercial vehicles can create unique congestion and parking problems. This is a particular concern in the Salinas area. ITS strategies such as travel information, hazard warning, and incident detection systems can not only improve truck operations, but may also provide safety and congestion relief benefits.

**Better Planning Data.** Short- and long-range planning is an important function for most of the region's transportation agencies. To be done effectively, this function requires accurate and comprehensive data. Several ITS applications provide much needed data that transportation planning agencies can use as input into the transportation planning process. For example, loop detectors that are often installed as part of signal control and freeway management systems can be used to collect traffic volume and speed data. Video detection systems using CCTV can provide vehicle occupancy, traffic volume, queue analysis, and speed data. So-called "Smart" Call Boxes link detection devices to a communication network and provide automated downloads of traffic-related data. The lack of better planning data is a region-wide issue, affecting all regional and local planning, transit, and public works agencies.

**Maintenance Activities.** Funding constraints have reduced the ability of State and Local governments to adequately repair heavily traveled roadways, let alone rural facilities that attract low traffic volumes, thereby creating a need for enhancing maintenance activity efficiency. The potential payoff in technological applications of highway maintenance could be significant, given that regional budgets for roadway maintenance and rehabilitation in the Central Coast are



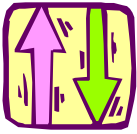


typically between 30 and 40 percent of projected transportation expenses. One element of Caltrans technology research is directed toward technological developments such as robotics and automation that improve the efficiency and safety of highway maintenance and construction activities. It should be recognized, however, that the implementation of ITS components might result in a relatively new set of maintenance challenges for State and Local agencies to solve. Additional maintenance burdens can be anticipated in the areas of personnel training, inventory management, equipment calibration, and of course the additional funding to cover these expenses. Improved maintenance of the street and highway system is a regional challenge that affects all facilities and agencies within the Central Coast.

**Inter-Agency Communication.** Because responsibilities are distributed, interagency communication and cooperation is critical to the effective management of the transportation system. An effective communications system allows all interested agencies to share important data in a timely manner thereby allowing the personnel to coordinate operations safely and efficiently. To address this issue, the regional standardization of communications protocols will enhance the ability of agencies to communicate and share data. The proposed transportation management center (TMC) can facilitate interagency communication by serving as a central processing point for transportation information. The need for improved inter-agency communication is a region-wide issue, affecting State and Local law enforcement and transportation agencies.

**Environmental Impacts.** Sensitivity to the environment is an important factor that shapes all transportation programs within the Central Coast Region. With constraints placed on major roadway capacity-building projects, the importance of managing the existing infrastructure is increased, with ITS being a potential tool to consider in that management effort. ITS applications that help reduce prolonged congestion and enhance the use of alternative modes of transportation would, in-turn, help reduce environmental impacts. ITS applications could also include those for monitoring vehicle emissions, and reducing the likelihood and impacts of incidents such as hazardous material spills. ITS can also help enhance the performance of the transportation system thereby reducing the need for additional major construction along the system. The implementation of ITS Projects or initiatives can also have environmental impacts such as aesthetics or visual impacts. An example of impacts might be ITS signs and displays along scenic corridors within the Central Coast Region. Such impacts must be considered before additional ITS applications are implemented. This is a region-wide issue, affecting all counties.





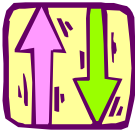
## ***2.3 CENTRAL COAST – EXISTING ITS INITIATIVES***

While ITS incorporates many new and emerging technologies, such systems are not completely new to the Central Coast. Indeed, the Central Coast region has experienced the deployment of several ITS applications, with several more in various stages of the planning process. These activities are the building blocks of a regional, integrated Intelligent Transportation System. A description of the types of ITS applications currently deployed or programmed for the Central Coast Region is presented below. The general location of the ITS infrastructure elements (e.g. changeable message signs, highway advisory radio, call boxes, traffic signal systems, etc.) are shown on Exhibits 2.6 and 2.7. A breakdown of existing initiatives by county is provided in Exhibit 2.8. Details regarding these applications on a county-by-county basis are provided in Working Paper #1, Volume III.

Several types of ITS-related elements have been deployed in various locations throughout the Central Coast Region. Although a number of these elements have been implemented in several locations, they have not been integrated into a single system. The types of ITS elements currently deployed within the Central Coast include:

**Closed Circuit Television (CCTV).** CCTV cameras are used to monitor operating conditions along roadways and verify incidents. Based on visual observation using CCTV cameras, it can be determined what type of emergency response or other type of management strategy should be deployed or dispatched. Furthermore, the cameras can be used to monitor weather conditions, and to identify damage to field equipment such as traffic signals and CMS units, resulting from severe storms or collisions. CCTV is currently deployed in the Cities of Santa Cruz and Santa Barbara at several key intersections. Caltrans has also deployed CCTV along SR 17 in Santa Cruz County, and at the US 101/SR 156 junction in Monterey County. Plans for additional CCTV are being considered by most agencies throughout the Central Coast Region and by Caltrans.

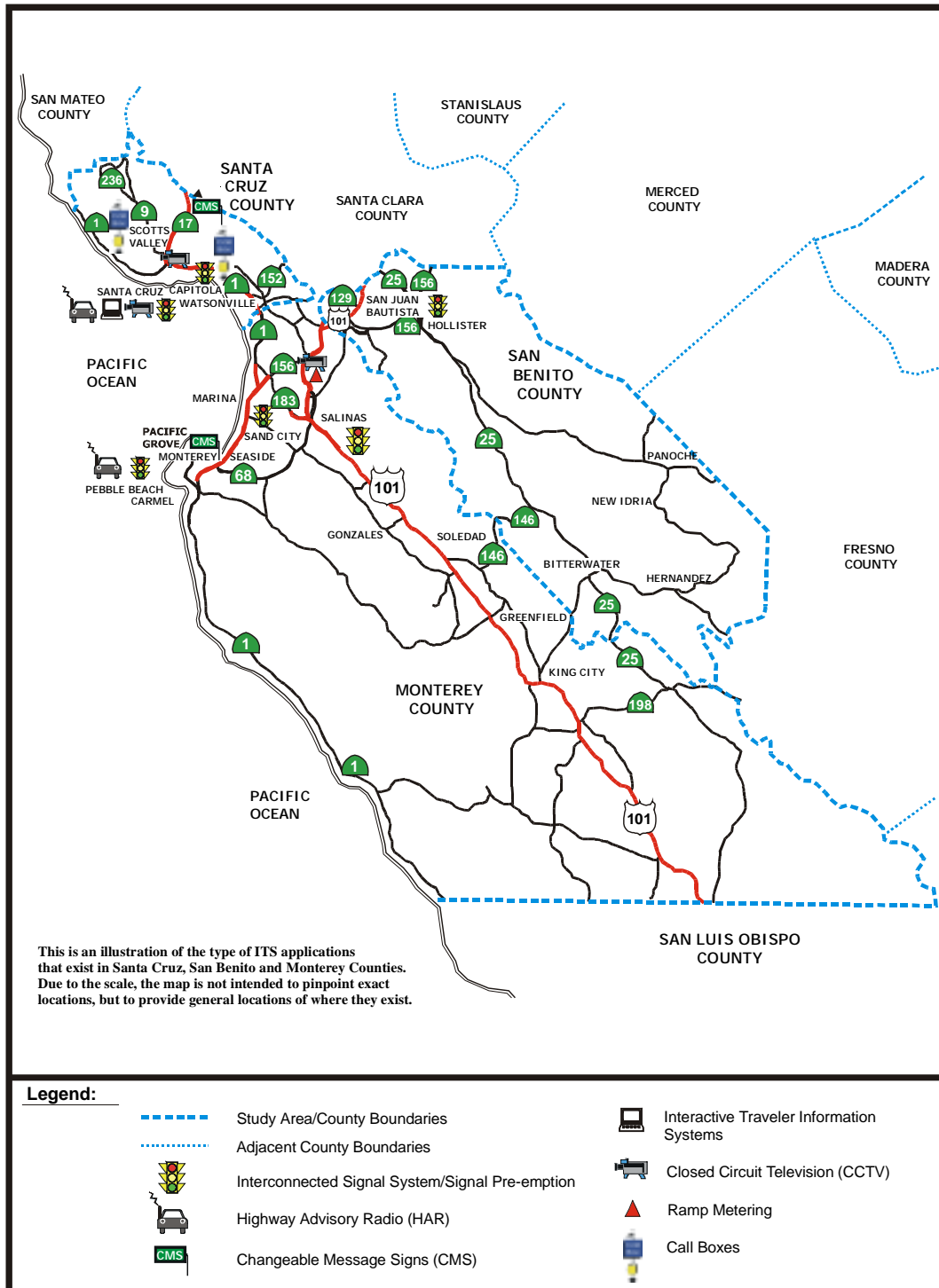


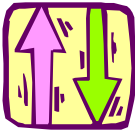


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*Exhibit 2.6 – Existing ITS Activities in the Central Coast Region (Northern Counties)*

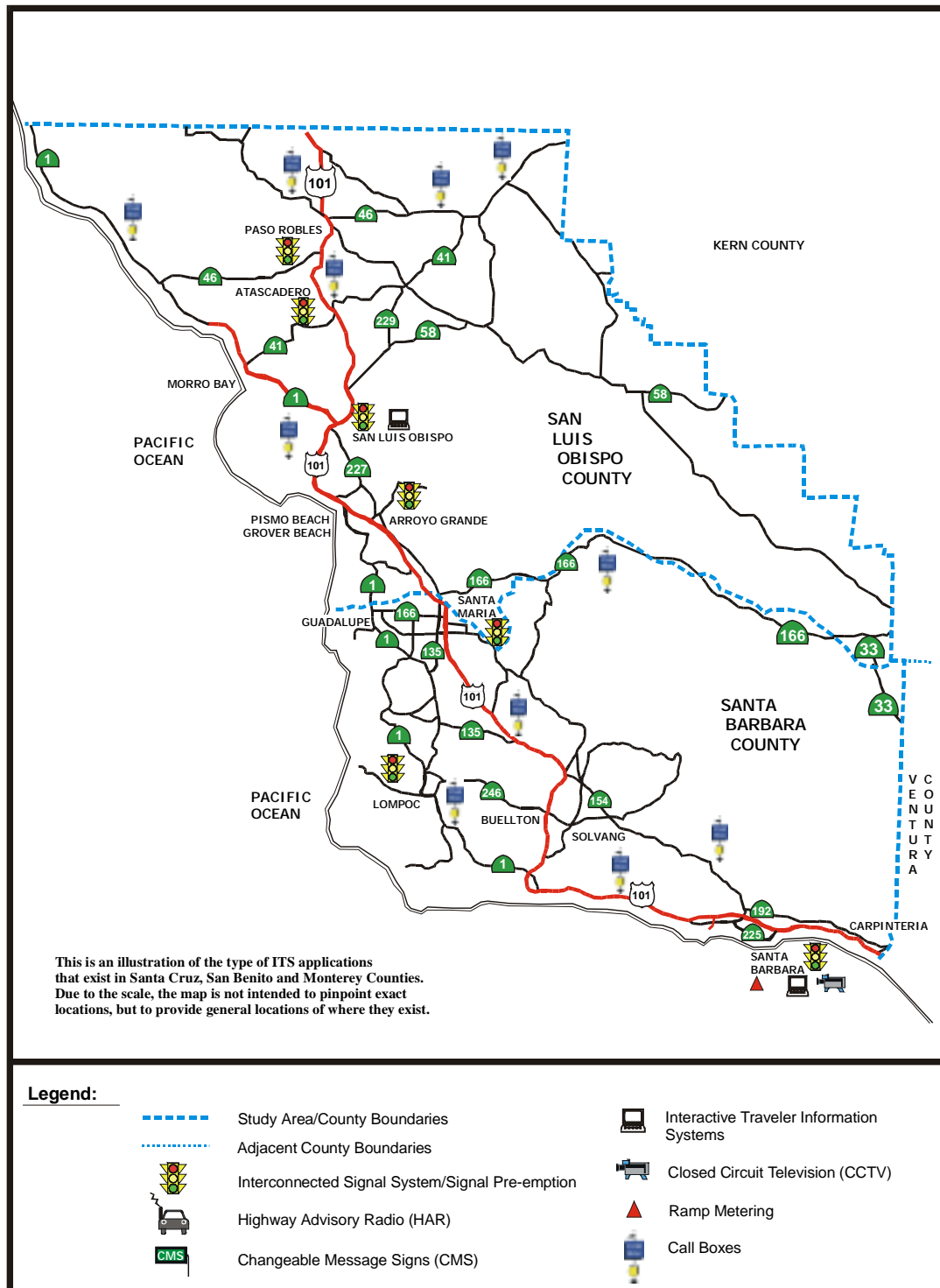


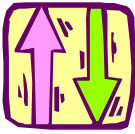


## Central Coast ITS Strategic Deployment Plan

### 2. Where Are We Now?

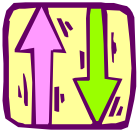
*Exhibit 2.7 – Existing ITS Activities in the Central Coast Region (Southern Counties)*





**Exhibit 2.8 – Existing ITS Activities in the Central Coast (County-by-County)**

<b>Monterey County</b>	<b>San Luis Obispo County</b>
<ul style="list-style-type: none"> <li>• Closed Circuit Television (CCTV)</li> </ul>	<ul style="list-style-type: none"> <li>• Interconnected Signal Systems</li> </ul>
<ul style="list-style-type: none"> <li>• Interconnected Signal Systems</li> </ul>	<ul style="list-style-type: none"> <li>• Call Boxes</li> </ul>
<ul style="list-style-type: none"> <li>• Highway Advisory Radio (HAR)</li> </ul>	<ul style="list-style-type: none"> <li>• Signal Pre-emption</li> </ul>
<ul style="list-style-type: none"> <li>• Changeable Message Signs (CMS)</li> </ul>	<ul style="list-style-type: none"> <li>• Rideshare Matching (Internet)</li> </ul>
<ul style="list-style-type: none"> <li>• Ramp Metering</li> </ul>	<ul style="list-style-type: none"> <li>• CCTV (planned)</li> </ul>
<ul style="list-style-type: none"> <li>• Call Boxes (planned)</li> </ul>	<ul style="list-style-type: none"> <li>• HAR (planned)</li> </ul>
<ul style="list-style-type: none"> <li>• Signal Pre-emption (planned)</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Traveler Information Systems (planned)</li> </ul>
<b>Santa Barbara County</b>	<ul style="list-style-type: none"> <li>• CMS (planned)</li> </ul>
<ul style="list-style-type: none"> <li>• CCTV</li> </ul>	<ul style="list-style-type: none"> <li>• AVL (being considered)</li> </ul>
<ul style="list-style-type: none"> <li>• Interconnected Signal Systems</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic Fare Payment (being considered)</li> </ul>
<ul style="list-style-type: none"> <li>• Call Boxes</li> </ul>	<b>Santa Cruz County</b>
<ul style="list-style-type: none"> <li>• Interactive Traveler Information Systems</li> </ul>	<ul style="list-style-type: none"> <li>• CCTV</li> </ul>
<ul style="list-style-type: none"> <li>• Ramp Metering</li> </ul>	<ul style="list-style-type: none"> <li>• Interconnected Signal Systems</li> </ul>
<ul style="list-style-type: none"> <li>• Automated Vehicle Location (AVL) Systems (planned)</li> </ul>	<ul style="list-style-type: none"> <li>• HAR</li> </ul>
<ul style="list-style-type: none"> <li>• CMS (planned)</li> </ul>	<ul style="list-style-type: none"> <li>• Call Boxes</li> </ul>
<ul style="list-style-type: none"> <li>• Smart Cards (planned)</li> </ul>	<ul style="list-style-type: none"> <li>• Signal Pre-emption</li> </ul>
	<ul style="list-style-type: none"> <li>• Interactive Traveler Information Systems</li> </ul>
<b>San Benito County</b>	<ul style="list-style-type: none"> <li>• CMS</li> </ul>
<ul style="list-style-type: none"> <li>• Interconnected Signal Systems</li> </ul>	<ul style="list-style-type: none"> <li>• AVL (being considered)</li> </ul>
<ul style="list-style-type: none"> <li>• Call Boxes (planned)</li> </ul>	<ul style="list-style-type: none"> <li>• Ramp Metering (being considered)</li> </ul>



## **Central Coast ITS Strategic Deployment Plan**

### **2. Where Are We Now?**

**Interconnected Signal Systems.** Interconnected signal systems include, but are not limited to, coordinated traffic signals, signal synchronization, and adaptive traffic signal systems. These applications allow for more efficient use of the transportation network by reducing delay at intersections and improving traffic flow (or progression) through a series of signals. Technologies that are “adaptive” or responsive to various peak traffic conditions can reduce congestion levels. Coordinated or interconnected signal systems, of varying levels of sophistication, are currently deployed throughout the region.

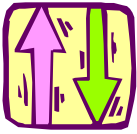


**Highway Advisory Radio (HAR).** Highway Advisory Radio provides traveler information to the motorist via the car radio. A HAR, if updated in a timely fashion, can be used to disseminate a significant amount of traveler information, such as traffic conditions and/or alternative route information. A HAR can disseminate data by using a live message or pre-selected taped messages. Currently, HAR is implemented in the City of Monterey and the City of Santa Cruz.

**Roadside Motorist Aid Call Boxes.** The California Call Box Program is a motorist-aid system operating on freeways, expressways, and highways throughout the state. It is administered at the county level by local Service Authorities for Freeways and Emergencies (SAFEs). The call boxes provide motorists with a direct connection to a CHP communications center. Using this link, motorists can report a road hazard, flat tire, mechanical breakdown, traffic accident or other incident. Call boxes are currently located in Santa Cruz, San Luis Obispo, and Santa Barbara counties, predominantly along US 101 and/or SR 1. Call box programs are also planned in San Benito and Monterey Counties.







**Automatic Vehicle Location (AVL) Systems for Commercial and Government Fleets.** Automatic Vehicle Location (AVL) systems utilizing Global Positioning Systems (GPS) location technology are an increasingly common feature of fixed-route transit systems and other types of vehicle fleets. They can be used to manage vehicle and operator location, and to provide “next bus arrival” information at bus stops and

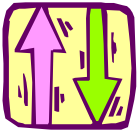
rail-bus transfer points. AVL is being considered for long-term implementation by Santa Cruz Metropolitan Transit District, transit agencies in San Luis Obispo County, and Santa Barbara Metropolitan Transit District.

**Signal Pre-emption for Emergency Vehicles.** Existing and emerging sensors are utilized to pre-empt signals for emergency response vehicles. Signal priority has been implemented along arterials in the Cities of Santa Cruz and San Luis Obispo, while applications are planned in Monterey County.



**Interactive Traveler Information Systems.** Interactive traveler information systems involve providing tailored information in response to a traveler request. The user can request and obtain current information regarding traffic conditions, transit services, traveler services, rideshare/ride matching services, parking management, and pricing. A variety of interactive devices may be used by the traveler to access information prior to a trip or en-route to a destination

including the use of telephones, kiosks, personal digital assistants, personal computers, and a variety of in-vehicle devices. Current applications include kiosks and Internet sites for transit information in Santa Cruz and Santa Barbara Counties. Rideshare matching via the Internet is also available in San Luis Obispo County. There are also numerous tourism websites that provide traveler information related to attractions, hotel/motel reservations, weather conditions, and available transit services.



**Changeable Message Signs (CMS).** Changeable Message Signs (CMS) are defined as electronic message boards located along streets and highways that provide information to drivers at key decision points. They can also warn motorists of upcoming congestion or assist in traffic routing during construction, storm events, collisions, or special events. CMS's have been implemented in Santa Cruz County along SR 1 and SR 17, and within the City of Monterey along

Washington and Del Norte Avenues. Planned applications include additional CMS along SR 17 in Santa Cruz, as well other locations in Monterey, San Luis Obispo, and Santa Barbara Counties. Caltrans has developed a prioritized list of future CMS locations. Locations with the highest priority include US 101/SR 154 (North), US 101/SR 46, US 101/SR 156 (South), SR 1/SR 68 (South), and US 101/SR 166.

**Ramp Meters.** Ramp meters are traffic signals located upstream from the merge point of on-ramps with the freeway. Operating on short cycles, the ramp meters allow vehicles onto the freeway one or two at a time. The purpose is to control the merge of traffic onto the freeway and to obtain maximum utilization for the available freeway lanes. Ramp meters are currently operating at two locations along US 101: at SR 156 in Prunedale (Monterey County), and at Garden Street in Santa Barbara. Ramp metering is being considered for SR 1 near SR 17 in Santa Cruz County.



**Smart Cards.** A "Smart Card" is basically a computer in a card, which can store far more information than magnetic stripe cards. "Smart Cards" can be used for purchasing tickets on bus and transit systems, parking fare collection, and payment for other public transportation services. A "Smart Card" works as a debit card that would maintain and subtract value, when the user makes purchases/transactions. "Smart Card" programs are currently planned in Santa Barbara County by the Santa Barbara Metropolitan Transit District Transit (SBMTD) to address long-term transit needs. San Luis Obispo Regional Transit Authority (SLORTA) is also considering implementation of electronic fare payment applications.